Subject	Year	Term
Chemistry	12	2

Topic

3.1.3 Group 7

Content (Intent)

Prior Learning (Topic)KS3 Y8 8C2 chemical reactions and the earth **KS4** C1 Atomic structure and the periodic table, C4 Chemical changes

Characteristic physical properties

(a) existence of halogens as diatomic molecules and explanation of the trend in the boiling points of Cl_2, Br_2 and I_2, in terms of induced dipole–dipole interactions (London forces) **(see also 2.2.2 k)**

Redox reactions and reactivity of halogens and their compounds

(**b)** the outer shell s^2p^5 electron configuration and the gaining of one electron in many redox reactions to form 1– ions

(c) the trend in reactivity of the halogens Cl_2, Br_2 and I_2, illustrated by reaction with other halide ions

(d) explanation of the trend in reactivity shown in **(c)**, from the decreasing ease of forming 1– ions, in terms of attraction, atomic radius and electron shielding

(e) explanation of the term disproportionation as oxidation and reduction of the same element, illustrated by:

(i) the reaction of chlorine with water as used in water treatment

(ii) the reaction of chlorine with cold, dilute aqueous sodium hydroxide, as used to form bleach

(iii) reactions analogous to those specified in (i) and (ii)

(f) the benefits of chlorine use in water treatment (killing bacteria) contrasted with associated risks (e.g. hazards of toxic chlorine gas and possible risks from formation of chlorinated hydrocarbons)

Characteristic reactions of halide ions

(g) the precipitation reactions, including ionic equations, of the aqueous anions Cl^-, Br^- and I^- with aqueous silver ions, followed by aqueous ammonia, and their use as a test for different halide ions.

Future Learning (Topic) 5.2.3 redox reactions and redox titrations

How will knowledge and skills be taught? (Implementation)	How will your understanding be assessed & recorded (Impact)
Practical work Displacement reaction X_2 + KX Precipitation reactions with silver nitrate **Written** Notes, explanation of reactivity down group 7, written equations for displacement reactions	- 1 x standard homework (Grade given. Written feedback. Response expected.) -1 x end of topic test (Grade given. Verbal feedback to class and individuals.)

How can parents help at home?

Look at the topic specific resources on the VLE

Use appropriate websites: MachemGuy, Allery Chemistry, Chemistry World – by Royal Society of Chemistry, ChemGuide.

Take an interest! Ask your children what they have learnt and be curious about their learning.

Helpful further reading/discussion		
Reading Text book chapter 8 p.112-116 The Science of Everyday Life by Marty Jopson Why Chemical Reactions Happen by Keeler and Wothers	**Vocabulary Lists** halogen Intermolecular forces Dipole Diatomic London forces Disproportionation Precipitate Redox Toxic Atomic radius Shielding attraction	**Careers Links** Analytical chemist Chemical engineer Clinical biochemist Forensic scientist Pharmacologist Process chemist Quality control analyst Research scientist Science writer Site chemist Teacher or lecturer Degrees; Chemistry Biochemistry Biomedical science Biological sciences Medicine Research chemist Veterinary medicine